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Stefan Beichl

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Davidson, Davidson & Kappel, LLC
485 7th Avenue
14th Floor
New York, NY 10018

EXAMINER

LEE, GILBERT Y

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,203	Applicant(s) BEICHL, STEFAN	
	Examiner GILBERT Y. LEE	Art Unit 3673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-40 is/are pending in the application.
- 4a) Of the above claim(s) 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-23 and 25-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed 11/28/08 has been entered.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the axially symmetrical components must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 20-23 and 25-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 20-23 and 25-35 recite “axially symmetrical components”. It is unclear from the disclosure and the drawings as to what is being claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. As best understood, claims 20-23, 25, 27, and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turnquist et al. (US Patent No. 6,105,967) in view of Kono (US Pub. No. 2002/0140174).

Regarding claim 20, the Turnquist et al. reference discloses a sealing arrangement (Fig. 1), comprising:

at least one first sealing device (e.g. 38) including an annular seal (e.g. 44);
a second sealing device (e.g. 36) including a brush seal (e.g. 36);
wherein the first and second sealing devices are placed between axially symmetrical components (e.g. 12, 14, or 10) symmetrical about an axis (Fig. 1), and the second sealing device is positioned so as to be axially offset from the first sealing device (Fig. 1); and

wherein the annular seal is a metallic ring seal (Fig. 1) having a separation site (Col. 4, Lines 54-66).

However, the Turnquist et al. reference fails to explicitly disclose the annular seal being a piston-ring seal.

The Kono reference, a brush seal, discloses that an annular seal can be either split or segmented (Figs. 3,4,6-9,11-14,16-18).

It would have been obvious to one of ordinary skill in the art at the time of the invention to make the annular seal of the Turnquist et al. reference a split ring in view of the teachings of the Kono reference in order to allow enlargement through combination of split-body parts (Kono, Col. 1, Lines 9-13).

Regarding claim 21, the Turnquist et al. reference, as modified in claim 20, discloses the brush seal being. Note that the brush seal of the Turnquist et al. reference is **capable of** being inserted into a recess of a housing in an axial direction and being secured into position by a fastening ring.

Regarding claim 22, the Turnquist et al. reference, as modified in claim 20, discloses the brush seal being. Note that the brush seal of the Turnquist et al.

reference is **capable of** being inserted or snapped in over a fastening ring into a recess of a housing.

Regarding claim 23, the Turnquist et al. reference, as modified in claim 22, discloses the open brush seal being a split ring (Turnquist et al., Col. 4, Lines 54-66).

Regarding claim 25, the Turnquist et al. reference, as modified in claim 20, discloses the brush seal including a plurality of bristle elements (Turnquist et al., Col. 4, Lines 28-30).

Regarding claim 27, the Turnquist et al. reference, as modified in claim 20, discloses one end (Turnquist et al., e.g. upper end of element 36) of the second sealing device being positioned in a recess (Turnquist et al., e.g. recess of element 12 holding element 14) of a first one of the axially symmetrical components (Turnquist et al., Fig. 1).

Regarding claim 30, the Turnquist et al. reference, as modified in claim 25, discloses the bristle elements being radially preloaded such that they have a curved shape in the radial direction (Turnquist et al., Fig. 1). Note that the bristles of the Turnquist et al. reference will be preloaded because they are designed to bear against element 10.

Regarding claim 31, the Turnquist et al. reference, as modified in claim 20, discloses the axial direction of the axially symmetrical components, the second sealing device is directly contiguous to the first sealing device (Turnquist et al., Fig. 1).

Regarding claim 32, the Turnquist et al. reference, as modified in claim 32, discloses the first sealing device forming a supporting plate for the bristle elements of the second sealing device (Turnquist et al., Fig. 1).

Regarding claim 33, the Turnquist et al. reference, as modified in claim 20, discloses a second one (Turnquist et al., e.g. 12) of the axially symmetrical components surrounding a first one (Turnquist et al., e.g. 10) of the axially symmetrical components.

Regarding claim 34, the Turnquist et al. reference, as modified in claim 33, discloses the second one of the axially symmetrical components being made up of a plurality of segments (Turnquist et al., Col. 3, Line 66 - Col. 4, Line 2).

Regarding claim 35, the Turnquist et al. reference, as modified in claim 20, discloses a first one (Turnquist et al., e.g. 12) of the axially symmetrical components comprising a housing of a gas turbine (Turnquist et al., Col. 3, Lines 57-61), and the second one (Turnquist et al., e.g. 14) of the axially symmetrical component includes a guide vane ring (Turnquist et al., e.g. 14) of a gas turbine having a plurality of vane segments (Turnquist et al., Col. 3, Line 66 - Col. 4, Line 2), the first sealing device and the second sealing device being positioned between the housing and the vane segments (Turnquist et al., Fig. 1, e.g. annularly) in order to seal a gap (Turnquist et al., e.g. gap between element 14 and 10).

Regarding claim 36, the Turnquist et al. reference, as modified in claim 20, discloses the separation site having an overlapping form (Kono, Figs. 3,4,6-9,11-14,16).

5. As best understood, claims 26, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turnquist et al. in view of Kono as applied to claims 20-23, 25, 27, and 30-36 above, and further in view of Beichl et al. (US Pub. No. 2004/0188943 A1).

Regarding claim 26, the modified Turnquist et al. reference discloses the invention substantially as claimed in claim 25.

However, the modified Turnquist et al. reference fails to explicitly disclose the bristle element being wound around a guide element and being secured by a clamping element.

The Beichl et al. reference, a brush seal for a turbomachine, discloses that a brush seal can be welded (Fig. 7) or wound around a guide element (Fig. 5, 20) and secured by a clamping element (17).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a guide element and a clamping element to the modified Turnquist et al. reference in view of the teachings of the Beichl et al. reference in order to provide a frictional variant (Beichl et al., Para. [0021]).

Regarding claim 28, the modified Turnquist et al. reference discloses the invention substantially as claimed in claim 27.

However, the modified Turnquist et al. reference fails to explicitly disclose the bristle element being wound around a guide element.

The Beichl et al. reference, a brush seal for a turbomachine, discloses that a brush seal can be welded (Fig. 7) or wound around a guide element (Fig. 5, 20).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a guide element to the modified Turnquist et al. reference in view of the teachings of the Beichl et al. reference in order to provide a frictional variant (Beichl et al., Para. [0021]).

Regarding claim 29, the Turnquist et al. reference, as modified in claim 28, discloses the unattached ends of the bristle elements engaging the second one (Turnquist et al., e.g. 28) of the axially symmetrical components.

6. As best understood, claims 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turnquist et al. in view of Kono and Hagle (US Patent No. 5,074,748).

Regarding claim 37, the Turnquist et al. reference discloses a sealing arrangement (Fig. 1), comprising:

at least one first sealing device (e.g. 38) including an annular seal (e.g. 44);

a second sealing device (e.g. 36) including a brush seal (e.g. 36);

wherein the first sealing device and the second sealing device are placed between axially symmetrical components (e.g. 12, 14, or 10) symmetrical about an axis (Fig. 1), and the second sealing device is positioned so as to be axially offset from the first sealing device (Fig. 1); and

wherein the annular seal is a metallic ring seal (Fig. 1) having a separation site (Col. 4, Lines 54-66).

However, the Turnquist et al. reference fails to explicitly disclose the sealing arrangement used in fixed components and the annular seal being a piston-ring seal.

The Hagle reference, a brush seal, discloses the use of brush seals in static components of a turbine (Col. 2, Lines 7-9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use seal of the Turnquist et al. reference in a static part of turbine in view of the teachings of the Hagle reference since the compliant nature of brush seal bristles can maintain resilient biased sealing contact at all times (Hagle, Lines 24-28)

The Kono reference, a brush seal, discloses that an annular seal can be either split or segmented (Figs. 3,4,6-9,11-14,16-18).

It would have been obvious to one of ordinary skill in the art at the time of the invention to make the annular seal of the Turnquist et al. reference a split ring in view of the teachings of the Kono reference in order to allow enlargement through combination of split-body parts (Kono, Col. 1, Lines 9-13)

Regarding claim 38, the Turnquist et al. reference, as modified in claim 37, discloses the brush seal. Note that the brush seal of the Turnquist et al. reference is **capable of** being inserted into a recess of a housing in an axial direction and being secured into position by a fastening ring.

Regarding claim 39, the Turnquist et al. reference, as modified in claim 37, discloses the brush seal. Note that the brush seal of the Turnquist et al. reference is **capable of** being inserted or snapped in over a fastening ring into a recess of a housing.

Regarding claim 40, the Turnquist et al. reference, as modified in claim 37, discloses the brush seal including a plurality of bristle elements (Turnquist et al., Col. 4, Lines 28-30).

Response to Arguments

7. Applicant's arguments filed 11/28/08 have been fully considered but they are not persuasive.

With regards to the applicant's argument of the drawing objection and the 35 U.S.C. 112, second paragraph rejection, the argument is not persuasive because two components cannot be described as being "axially symmetrical". The applicant points to various paragraphs and Fig. 1 of the current disclosure. However, the paragraphs only disclose "axially symmetrical components which are disposed concentrically about one another." As stated before, in order for Fig. 1 to be "axially symmetrical" one would be able to cut the vane and housing along the axis at any point around the circumference and have two symmetrical pieces. The argument is not persuasive because the drawings do not show axially symmetrical pieces.

Applicant further directs the examiner to the Rossmann et al. (US Patent No. 4,563,128) reference. The Rossmann et al. reference does use the term "axially symmetric"; however, the Rossmann et al. reference clearly defines the term. The current disclosure fails to explicitly define the term "axially symmetrical". Therefore, the term must be interpreted by its broadest definition.

With regards to the applicant's argument of the 35 U.S.C. 103(a) rejections, the argument is not persuasive. The applicant argues that the combination of Turnquist et al. in view of Kono and further in view of Hagle fails to disclose a "metallic piston-ring". A "piston-ring" is merely a sealing ring have a split or separation site. Clearly the combination discloses a seal with a split or separation site. Applicant further directs the examiner to Col. 5, Lines 45-48 of the Turnquist et al. reference. This passage clearly only states that the bristles are welded to the seal ring and does not teach away from splitting or separating the sealing ring. Applicant argues that the Turnquist et al. reference would not want a piston-ring seal as it segments its backing plate 38, as well as its seal ring 14; however, this passage does not teach away from making the sealing ring into a split ring.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GILBERT Y. LEE whose telephone number is (571)272-5894. The examiner can normally be reached on 8:00 - 4:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia L. Engle can be reached on (571)272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Patricia L Engle/
Supervisory Patent Examiner,
Art Unit 3673

/G. Y. L./
Examiner, Art Unit 3673